

WHAT IS CLAIMED IS:

1. A crack-resistant paper or board comprising a cellulose fiber network web; and a thin discontinuous polymer material impregnated into the web in geometrical formations.

2. The crack-resistant paper or board as claimed in claim 1, wherein the thin discontinuous polymer material is a thermoplastic or thermoset material.

3. The crack-resistant paper or board as claimed in claim 1, wherein the geometrical formations are thin rectangular stripes, equi-distant circles or diamond-shape formations.

4. The crack-resistant paper or board as claimed in claim 1, wherein the polymer is approximately 5%-20% a basis weight of the paper or board.

5. The crack-resistant paper or board as claimed in claim 1, wherein the polymer is selected from the group consisting of poly-butadiene, acrylonitrile-butadiene, ethylene vinyl acetate-butadiene and styrene-butadiene.

6. The crack-resistant paper or board as claimed in claim 1, wherein the polymer is selected from the group consisting of a latex blend, an acrylic polymer, a polyester resin and a liquid crystalline polymer.

7. The crack-resistant paper or board as claimed in claim 1, wherein the polymer is a copolymer selected from the group consisting of polyhydroxybutyrate-butanoate and a cellulose acetate butyrate.

8. The crack-resistant paper or board as claimed in claim 1, wherein the paper or board has a polymer material coated on a surface of the paper or board.

9. A process for producing a crack-resistant paper or board comprising the step of:

depositing a thin discontinuous polymer onto a cellulose fiber network web and, then having same be absorbed into the cellulose fiber network web, thereby producing a geometrical formation.

10. The process as outlined in claim 9, further comprising the step of depositing the thin discontinuous polymer through a geometrical template and onto a formed and dried cellulose fiber network web.

11. The process as outlined in claim 9, wherein the geometrical formations are thin rectangular stripes, equi-distant circles or diamond-shaped formations.

12. The process as outlined in claim 9, wherein the polymer is approximately 5%-20% of a basis weight of the paper or board.

13. The process outlined in claim 9, wherein the polymer is selected from the group consisting of polybutadiene, acrylonitrile-butadiene, ethylene vinyl acetate-butadiene and styrene-butadiene.

14. The process outlined in claim 9, wherein the polymer is selected from the group consisting of a latex blend, an acrylic polymer, a polyester resin and a liquid crystalline polymer.

15. The process outlined in claim 9, wherein the polymer is selected from the group consisting of polyhydroxybutyrate-butanate and a cellulose acetate butyrate.

16. The process outlined in claim 9, further comprising the step of coating a polymer onto the formed crack-resistant paper or board to produce a coated paper or board network.

17. The process outlined in claim 16, further comprising the step of printing on the coated paper or board network.